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PROCEEDINGS OF THE NEW YORK ENTOMOLOGICAL SOCIETY.

MEETING OF NOVEMBER 26.

A regular meeting of the New York Entomological Society was held November 26, 1917, at 8:15 P. M., in the American Museum of Natural History; President Harry G. Barber in the chair with nineteen members and four visitors, including Mr. Fred Muir, Entomologist of the Sugar Planters' Association of Hawaii, present.

The Secretary read notices of the death of Mr. Wm. D. Kearfott and Charles Palm which will be printed in the JOURNAL, and was instructed to send letters of regret to their respective families.

Mr. Davis presented photographs for the Album of several entomologists in the field.

The President called upon Mr. Muir to speak of his experiences in distant parts of the world. Mr. Muir said that in view of the length of the regular program he would speak briefly of the Hawaiian Islands, which he considered isolated oceanic islands to which during a tremendously long time the flotsam and jetsam of ocean drift had brought a few forms of vegetable and animal life from which have since been evolved the numerous species that in a few tribes only now characterize its flora and fauna. It is noteworthy that in this evolution no degree of adaptation is exhibited, species have gone on forming regardless of adaptation.

The peculiar simplicity of the biological conditions with known factors make these islands the finest center for the study of evolution, which is also encouraged by the existence of the Bishop Museum. From an economic point of view, it may be said that introduced insects, from the absence of their parasites, are liable to play an important rôle. As an example, a leaf hopper damaged the sugar crop \$5,000,000 in a year; but the introduction of an egg parasite from Fiji reduced this to \$15,000. The absence of secondary parasites has caused such introductions of parasites to be attended with unusual success. Other instances have been the introduction of a Tachinid fly from New Guinea to combat a Rhynchophorous beetle, whereby a gain of 15 per cent. has been effected; and of *Scolia manila* to combat *Anomala orientalis*, whose grubs do much damage to the roots of sugar cane. 300 *Scolias* were introduced and have now increased to millions, having no parasites to reduce their spread.

Mr. Muir also referred to some of the insects conspicuous by their absence, there are for instance no indigenous Lamellicorn beetles, no Photophagous beetles, no Cicindelidæ, just as in plants there is a total absence of coniferous trees; and said that he considered such absence an evidence of the islands having always been an isolated area without connection with any continent. Nothing has got there by walking or flying and everything that has reached Hawaii could have done so by ocean drift.

Mr. Davis exhibited the list of New York State Lepidoptera by Dr. Forbes and spoke on "Some Interesting Cicadas." His remarks were illustrated by distribution maps and eight large boxes of specimens, containing 16 species of Cicadas from Texas, New Mexico and Arizona, collected in the summer of 1917 by Mr. Harry H. Knight and Dr. Joseph Bequaert of the Cornell Biological Expedition. An account of these insects was published in the December, 1917, number of the JOURNAL. He also exhibited four species of Cicadas collected in the early part of 1917 by Mr. E. B. Williamson, of Bluffton, Indiana, along the Magdalena River in Colombia, S. A., and two species collected at Suretka, Costa Rica, by Mr. Alanson Skinner and Mrs. Skinner, in April, 1917. In the collection made by Williamson *Proarna insignis* Dist. were represented by 127 females and but 2 males. Many of these came to light. Mr. Skinner had a like experience at light, collecting 54 females and but one male of *Proarna championi*. A box of miscellaneous insects collected in Costa Rica by Mr. Skinner was also shown.

Mr. Sherman, under the title "Entomological Literature" exhibited many rare old books among which were the

F. V. Melsheimer Catalogue of 1806,
Say's American Entomology of 1817 and 1824,
Say's Descriptions of New Species of 1829,
Catalogue of Animals and Plants of Mass. of 1835,
Provancher's Coleoptera of Canada,
Lepidoptera Cubana of Gundlach, 1881.

All of these were copies of unusual interest from their excellent condition and accompanying autographs and letters of Say, Gravenhorst, Harris, Edwards and others. Peal's original portrait of Say was also included.

Mr. Sherman gave an interesting account of the causes that make such books valuable, primarily their intrinsic merit, leading to a demand for them, then their date, the destruction of copies by fire or constant use, the original small edition published, sometimes their status as part of a series, giving examples of each class. He referred to the presidential address by Mr. Schwarz (Proc. Ent. Soc. Wash., II, 1891) as an excellent presentation of the facts respecting the earliest American literature, and spoke of the expedients, such as photographing pages needed, reprints, as of Kirby's and Say's works, for supplying demand for some of special importance, and said the value of certain books, of which few copies were available though their merit made their acquisition imperative, like Packard's 5th Report and LeConte's Classification, was rapidly advancing.

Mr. Dow mentioned a list of insects in the History of New Hampshire which from its early date deserved a place in Mr. Sherman's list.

Mr. Woodruff after speaking of Mr. Williamson's illness in Pittsburgh gave "Notes on Some Local Dragon Flies" illustrated by specimens. He called attention to the uncertainty with respect to the identity of the nymph of *Lanthus albistylus* Hagen, and the fact that in Muttkowski's Catalogue notation is made that the nymph is unknown. After presenting such evidence as was available, he offered as his conclusion that Hagen had himself described

this nymph in 1885, under what he supposed to be *Tachopteryx thoreyi*. He also exhibited to the Society exuvia of an undoubted nymph of the species in question, which he had taken and reared the past summer at Litchfield, Conn.

In the course of general comments with respect to the distribution of various species of the Agrionidæ, he particularly referred to *Enallagma piscinarium* Williamson, which has a very local distribution, of which a considerable colony thrives at Lakehurst, N. J. He also called attention to the comparatively brief period of the life of the imago of this species and of *Enallagma recurvatum*, also found at Lakehurst, N. J., as recorded by Mr. Davis in his original description, the period of flight of each at that locality being substantially confined to the last three weeks of June.

Mr. Davis said there were now 122 species in the Local List.

Mr. Leng exhibited *Gonotropis gibbosus* Lec., collected on dead hemlock at Peterborough, Ont., in July, by Mr. Frank R. Morris.

Mr. Burns exhibited *Mutilla occidentalis* collected at Fort Wadsworth, Staten Island, August 11, 1917, and commented upon its being apparently confined to that part of the island.

Mr. Davis exhibited a cartoon by Burrill illustrating the farmer's difficulties in combating insect pests.

MEETING OF DECEMBER 4.

A regular meeting of the New York Entomological Society was held December 4, 1917, at 8:15 P. M., in the American Museum of Natural History, President Harry G. Barber in the chair, with 23 members and three visitors present.

Letters from Miss Rosa C. Palm, thanking the Society for its action respecting the death of Charles Palm and enclosing his photograph, and from the associates of the late Wm. D. Kearfott were received.

Mr. Davis read an obituary notice of Chas. E. Sleight that he had prepared for the JOURNAL.

Mr. Davis exhibited Bull. 391, C. U. Agl. Exp. Sta., containing "Revision of Genus *Lygus*" by Harry H. Knight and submitted for publication in the JOURNAL a "Key to subfamilies of Miridæ" by the same author.

Mr. Mutchler exhibited two boxes of Lycidæ and described "Some Peculiar Structures in West Indian Lycidæ," consisting of processes projecting from the abdomen of two undescribed species of *Thonalmus*, found in the island of Montserrat by the late H. G. Hubbard. They occur only in the female and only in the Montserrat species, issuing from the sides of the third segment as pubescent peduncles and terminating in enlarged punctulate lobes. The form of the lobe differs in the species. The margin of the second segment in these species is emarginate laterally opposite the processes. Mr. Mutchler also pointed out that throughout the genus *Thonalmus* a correspondence between the characters of the species and their distribution can be traced, those of the Greater Antilles being red and blue, the remainder orange and blue in color, the described species of Jamaica having acuminate

scutellum, the remainder subquadrate scutellum, those of Hispaniola only forming crests apically from the elytral costæ, those of other islands more feebly developed in that respect. Some African Lycidæ with subhumeral spines were also shown. The peculiar abdominal structures were also exhibited in enlarged drawings made by Mr. Olsen and were discussed by Dr. Bequaert and Mr. Schaeffer, both of whom disclaimed any knowledge of homologous structures, and by Dr. Lutz, who said that search of the literature had so far failed to disclose anything similar. Dr. Bequaert said they might possibly be scent organs and Mr. Davis called attention to certain auricular appendages in male dragonflies as being distantly similar.

Mr. Schaeffer exhibited all the known species of *Amblychelia* of the United States reviewing the previous disputes respecting certain forms and giving as his opinion the following list of species, varieties and synonyms:

A. cylindriformis Say.

ssp. *piccolomini* Reiche.

A. baroni Rivers.

enodis Casey.

var. *longipes* Casey.

A. schwarzi W. Horn.

Mr. Schaeffer also recorded the following additions to the known distribution of Cicindelidæ, viz.: *Cicindela striga*, St. Petersburg, Fla., collected at light by Mr. J. Doll. *Cicindela decemnotata*, Alaska, received from Mr. B. Preston Clark, and spoke of specimens of *Cicindela arizona* taken at the type locality by Mr. Englehardt and of *Cicindela parowana* found by Mr. Englehardt at a new locality in Utah.

His remarks were discussed by Mr. Harris and by Dr. Bequaert. On reference to Merriam's faunal map it appeared that *Amblycheila cylindriformis* was confined to Sonoran regions, while the other species occurred in the higher Transition regions or near their junction with the Sonoran. Dr. Bequaert mentioned finding one specimen at light in July and another after rain, but could not corroborate their abundance.

Mr. Barber read a paper on "Some Hemiptera from the Adirondack Mts. collected by Mr. Notman," exhibiting a collection of 56 species of Heteroptera from Keene Valley, Essex Co., N. Y. He mentioned the thoughtful generosity of Mr. Notman in giving his time and attention to further the knowledge of the distribution of insects of the State other than the Coleoptera, in which he was especially interested. Comparison of the number of species was made with the number of species listed in Smith's New Jersey List (409) and in Parshley's List of New England (419). Reference was also made to the various lists of Hemiptera of similar regions in the northern United States. Mr. Barber referred to the comment of Dr. Wm. L. Bray in the "Development of the Vegetation of New York State," 1915, on the character and origin of the flora and insect fauna of Keene Valley in the Adirondacks. Though in the main the hemiptera fauna belonged to the Canadian Transition, the

northward trend of more southern and austral species could be explained on the ground of a north and south cleft, which give rise to so-called "warm pockets." Several strictly boreal forms were mentioned and others referred to which were more southern in their occurrence.

Mr. Nicolay exhibited a part of his collection of exotic Buprestidæ comprising the brilliant Julodini of southern Europe, Asia, Africa and Malay Archipelago.

Mr. Leng called attention to an article in "Science" of November 9 by Ralph C. Benedict, establishing again *Tineola biselliella* as the common clothes moth of the vicinity, and giving results of treatment in storage warehouses; also to Charles Dury's "Synopsis of Cisitæ" in Journal Cin. Soc. Nat. Hist., XXII, No. 2.

MEETING OF DECEMBER 18.

A regular meeting of the New York Entomological Society was held on December 18, 1917, at 8:00 P. M., in the American Museum of Natural History, President Harry G. Barber in the chair, with twenty members and four visitors, including Lieut. W. J. Chamberlin, present.

Mr. C. William Beebe, N. Y. Zoological Park, was elected an active member.

The date of both January meetings was, on motion, seconded and carried, postponed for one week each.

The President appointed as a Nominating Committee, Messrs. Dickerson, Watson and Sherman.

Mr. C. H. Richardson read a paper "Comments on the Choice of Food by Insects" in which the observed facts were summarized and analyzed. During the discussion that followed Mr. Richardson said that in Nevada he had watched large Cicadas start from the top of a sagebrush and an Asilid fly, evidently prompted by the movement, start out and catch them; but Mr. Davis objected that in his wide experience in Cicada hunting he had never had similar experience, the Cicada Killer in the East being guided neither by sound or movement.

Dr. Bequaert, with the aid of blackboard tables and several boxes of specimens, offered "Some Remarks on the Distribution of Wasps" which will be printed in full in the Museum Bulletin.

Mr. Shoemaker read a paper on "Collecting in Big Indian Valley" illustrated by several boxes of the insects he caught, among which were so many of northern distribution that Mr. Sherman said they looked like the wash-up on the shores of Lake Superior; Mr. Shoemaker said in part that from Big Indian Station on the D. & H. R. R. a road follows the valley to and beyond Slide Mt., 4,200 ft. high, with some of the highest and wildest mountains of the Catskill region rising on either side. He spent ten days in 1915 and the week between July 1 and July 7, 1917, at Johnson's farmhouse on this road, collecting principally on the flowering shrubs by the roadside. The first trip

this year, on July 1, will long be remembered, for only a few minutes after opening the umbrella a couple of sharp whacks at a flowering tree brought no less than four *Anthophilax*, one of which was nearly black, into the umbrella besides a number of other beetles, elaters, longhorns, etc. Mr. Shoemaker continued "I will not try to describe my feelings and anxiety to grab them all at once, for all of you have doubtless had the same experience—suffice it to say that not one of the four escaped me; that trip decided my method of collecting for the entire week and, with the exception of two dozen jars that I planted for *Cychnus* (which yielded about 20 *canadensis* and one *viduus*), the daytime was spent beating into the umbrella, the nights in sugaring and light collecting."

Mr. Dickerson corroborated the excellence of the region which offered the best opportunity for collecting northern species near New York, and Mr. Davis humorously objected that few, if any of us, had experienced the excitement of seeing four live *Anthophilax* at once.

Mr. Davis exhibited two lots of Cicadas. From Dulzuras, San Diego Co., California, Professor Wm. S. Wright had sent his many specimens of *Okanagana vanduzeei*, with varieties *consobrina* and *californica*, all collected in June, 1917. *O. californica* has often been considered a distinct species, but is probably but a variety of *vanduzeei*, as first suggested by Mr. Van Duzee. Twenty specimens of *Tibicinoides cuprosparsa* and three *Clidophleps distantis* were also collected in June at Dulzura by Professor Wright.

The second lot of Cicadas were received from Mr. Morgan Hebard and consisted of nine species, among them the beautiful *Ugada nutti* from Africa. Of American species *Tibicen resonans* was represented by 22 individuals, collected at Indian Rock Beach, Pinellas Co., Florida, September 17, 1917, by Mr. Hebard and Mr. Rehn, who found the insects in great numbers in a grove of small oaks. The males were in full song and the noise produced was considerable. Owing to their fresh condition the specimens were very beautiful and the pruinose spots on pronotum and tergum were present and conspicuous.

Mr. Dow read a paper criticizing the methods of publication employed by the owners of the "Lepidopterist" which will be published elsewhere.

Lieut. Chamberlain, upon invitation by the President, spoke of collecting *Buprestis connexa* in the Blue Mountains of eastern Oregon and northern California, always in the vicinity of yellow pine, once by actually cutting it out of the wood. *Buprestis lauta* appeared to have several host plants but cedar was surely one.

In reply to a question by Mr. Dow, Lieut. Chamberlain said that his personal experience in collecting *Trachykele* was limited to three specimens, but from Mr. Hopping's information and other sources, he believed Incense Cedar and Redwood were its food plants.

Mr. Sherman said he learned by letter from Col. Casey that no further "Memoirs on the Coleoptera" would be published until the fall of 1918.

MEETING OF JANUARY 8.

The annual meeting of the New York Entomological Society was held at 8.00 P. M., January 8, 1918, in the American Museum of Natural History. President Harry G. Barber in the chair, with fifteen members and four visitors present.

The Nominating Committee reported the following nominations for officers for 1918: *President*, Lewis B. Woodruff; *Vice-President*, Edward D. Harris; *Treasurer*, William T. Davis; *Secretary*, Charles W. Leng; *Librarian*, Frank E. Watson; *Curator*, Andrew J. Mutchler; *Executive Committee*, R. P. Dow, G. P. Engelhardt, H. B. Weiss, E. Shoemaker, H. Notman; *Publication Committee*, C. Schaeffer, F. E. Lutz, W. P. Comstock, John D. Sherman, Jr.; *Delegates to New York Academy*, Wm. T. Davis. There being no further nominations, the Secretary was instructed to cast an affirmative ballot for the persons above named who were thereby elected.

Mr. Notman exhibited nine boxes of Adirondack Carabidæ including 169 species, all, with one exception, personally collected, mounted and identified, and called attention to the following as being apparently peculiar to high altitudes and elevations:

Spharoderus brevoorti Lec. Maine, Canada, Lake Superior.

Loricera cærulescens Linn. No. Eur., No. Asia.

Nebria sahlbergi Fisch. Alaska, Br. Col., Labrador, N. H.

Nomius pygmaeus Dej.

Bembidium nitidum Kby. Can. to Pacific Coast.

Bembidium scopulinum Kby. Labrador, Canada, N. H., N. Eng., N. Y., Mich., Man., Colo.

Bembidium oblongulum Mann. Canada, Maine, N. H., Vt., Mass., Ohio, Mich., Alaska.

Patrobus septentrionis Dej. No. Eur. and Amer., Labr.

Pterostichus punctatissimus Rand. Maine, L. Sup., Nfld., Mass., Canada.

Pterostichus (Cryobius) hudsonicus Lec. H. B. T., N. H., L. Sup. (Alaska?).

Pterostichus (Cryobius) fatuus Mann. Alaska.

Pterostichus (Cryobius) mandibularis Kby. Canada, Lat. 54.

Amara arenaria Lec. Canada, Maine, N. H., Mass., L. Sup.

Amara longula Zimm. Br. Col. to So. Cal.

Amara pallipes Kby. Can., L. Sup., Mt. Wash., Mass., N. J., Ia., Wis.

Amara polita Lec. L. Sup., Colo., Pa.

Calathus advena Lec. Canada, Alaska.

Platynus deceptivus Lec. Nova Scotia, L. Sup.

Platynus 4-punctatus Deg. Alaska.

Miscodera arctica Payk. Scotland, Lapland, Newfoundland, Maine, Alaska.

Harpalus spadiceus Dej.

Harpalus sp. near *laticeps* Lec.

Stenolophus scitulus Csy. Philadelphia.

Tachycellus nigrinus Dej. Alaska.

Tachycellus tibialis Kby. Canada.

mentioning for each its distribution, as given above, outside the Adirondack Mts. In reference to certain species Mr. Notman also added some interesting information, *Cryobius mandibularis* being for instance found between 3,000 feet and the tree line, while *Cryobius hudsonicus* and *fatuus* were found only above the tree line, where in fact most of the boreal species listed occurred. An exception, however, was *Miscodera arctica* of which two specimens were found on the cement steps of the Club House in Keene Valley, about 1,000 ft. elevation. These steps were surrounded by grass and as *Tachycellus nigrinus* was invariably found flying over lawns and never under stones, the two may have similar habits. Mr. Notman also mentioned that in identifying his Adirondack Carabidæ by original descriptions, he was forced to dissent with some published synonymy. *Tachycellus tibialis* Kby. was certainly not synonymous with *nigrinus*, nor *Stenolophus scitulus* Casey with *conjunctus* Say. The *Miscodera* of the Adirondacks looked also very different to the European specimens and the name *insignis* applied by Mannerheim to Alaska specimens should probably be reinstated; or possibly the name *hardyi* given by Chaudoir to Newfoundland species.

In the discussion that followed Messrs. Barber, Sherman and Leng referred to similar species occurring in Maine, Labrador and Newfoundland, adding some of the distribution data included above.

Mr. Weiss read a paper on "*Gryllotalpa gryllotalpa*, the European Mole Cricket," which will be printed elsewhere. It was illustrated by specimens of all stages from egg to adult and photographs and was discussed, especially in comparison with native mole crickets, by Messrs. Davis, Barber, Engelhardt and Richardson.

Mr. Dow, after reading an entomological poem by Sir Joseph Banks, read his own paper, entitled "How Long Does an Insect Live?" in which the great difference between the adult life of mayflies, beetles like *Meloe*, etc., was contrasted with the prolonged adult and larval existence of certain wood-boring species.

In the discussion that followed, other instances of long larval existence were recalled, Lieut. Chamberlin in particular giving one of *Buprestis lauta* emerging after sixteen years from the door-jamb of a house in Oregon.

Mr. Dow also exhibited correspondence with S. E. Cassino regarding the "Lepidopterist."

Mr. Sherman gave some facts regarding the sale of Dr. Leconte's books and letters from the widow of Thomas Say. Mr. Davis recorded that she had lived on Staten Island in 1880.

Mr. Engelhardt exhibited *Cicindela parowana* Wickh. taken at Iron Spring, Iron Co., southwest Utah, 5,500 ft. elevation, July 20, 1917, on sandy soil covered by sparse grass, near a small reservoir, the water of which was heavily impregnated, and said that this locality was 25 miles southwest from Lake Parowan, the type locality, and that doubtless it occurred in suitable places throughout the Parowan Valley and possibly even to Shirt's Lake; but that none were found on bare sandy ground.

Mr. Davis, after pointing out that the boxes exhibited were probably part of those used by Dr. George H. Horn, and therefore parent of the Schmidt boxes, exhibited 26 Cicadas collected in July, August and September, 1917, by Mr. M. R. Harrington, at Hot Springs, Arkansas, and pointed out how clearly it was shown by the species represented, that nearly the same natural conditions appertained as in southern New Jersey and surrounding country. The species represented were the following: *Tibicen pruinosus* Say, 17 specimens; *Tibicen linnei* S. & G., two; *Tibicen sayi* S. & G., one; *Tibicen lyricen* DeGeer, four; *Tibicen davisii* S. & G., one; *Tibicen auletes* Germ., one.

MEETING OF FEBRUARY 5.

A regular meeting of the New York Entomological Society was held February 5, 1918, at 8:00 P. M., in the American Museum of Natural History, President Lewis B. Woodruff in the chair, with twelve members present.

Mr. E. L. Bell, 438 Amity St., Flushing, N. Y., was proposed for active membership by Mr. Watson.

The President appointed Messrs. Bequaert and Nicolay on Field Committee and Messrs. Wiegmann and Notman on Auditing Committee.

Mr. Leng exhibited *Microclytus gazellula* and *M. gibbula*, two longhorn beetles of similar appearance, and read a correction of previously announced synonymy; together with a paper by Frank R. Morris, of Peterboro, Ont., explaining how the error had occurred and had been detected.

Mr. Nicolay exhibited a complete collection of the species of the genus *Buprestis*, reviewing its history, larval characters and taxonomy. It was noteworthy that Burke, from study of the larvæ, had proposed to divide the genus into three sections, which course had also been suggested by Casey, from study of adult characters.

Dr. Avinoff on invitation exhibited a box of rare Rhopalocera, *Anthocaris orientalis*, from Banff, Alberta, indistinguishable from the Siberian species, *Argynnis* from Alaska, *Papilio machaon*, Alaska variety and many species of *Parnassius*, remarking that the occurrence of Palearctic forms in the northern parts of America was of much interest.

Mr. Weiss exhibited *Idiocerus scurra* Germ, a leaf hopper, of which he gave briefly the life history.

Mr. Davis exhibited "Fieldbook of Insects" just published by Dr. Lutz.

Mr. Leng exhibited "Color and Color-Pattern Mechanism of Tiger Beetles" by Victor E. Shelford.

Mr. Dow mentioned that C. W. Howard, Canton Christian College, Canton, China, was prepared to supply Chinese insects to those interested.

Mr. Davis exhibited four species of *Cicada*, *hieroglyphica*, *pruinosa*, *lyricen* and *auletes*, collected by A. E. Brower near Willard, Missouri, and read extracts from Mr. Brower's letters in reference to their being taken by yellow-billed cuckoo, as follows:

"I found three or four species to be common this season, but found myself unable to compete with the yellow-billed cuckoo in securing them."—From letter of A. E. Brower, Willard, Mo., December 9, 1917.

Referring to a *Tibicen auletes* with part of its thorax eaten, Mr. Brower writes under date of January 30, 1918, "Yes, I rescued the specimen of *Tibicen auletes* from a cuckoo and I have seen them chase many specimens and eat some. I spent the month of August and early September in the hills and both the Cicadas and the yellow-billed cuckoo were common. The cuckoo is usually shy, but when after a Cicada it is not so, as I have often thrown rocks at them to chase them away. I have seen them listen to the Cicada singing for a moment, and then fly to the tree and begin an immediate search for the insect, and the Cicadas certainly dread the presence of the Cuckoo.

MEETING OF FEBRUARY 19.

A regular meeting of the New York Entomological Society was held February 19, 1918, at 8:00 P. M., in the American Museum of Natural History, President Lewis B. Woodruff in the chair, with seventeen members and five visitors present, including Dr. Avinoff of Russia.

Mr. E. L. Bell, 438 Amity St., Flushing, N. Y., was elected an active member of the Society.

Mr. Olsen read a paper on "Collecting at Woods Hole, Mass.," illustrated by photographs of the locality and several boxes of specimens. After describing the physical characteristics of the boulder-stream coast and adjoining marsh and woodland, and the equipment of the Marine Biological Laboratory, Mr. Olsen spoke of the Hemiptera captured, of which a list is appended to the original minutes.

Dr. Avinoff, after exhibiting 100 original colored plates by John Abbott, spoke of the "Boundary of the Palæarctic Region as illustrated by the Distribution of Rhopalocera" saying in part that precision in zoogeography was best attained by studying the distribution of species, being careful, however, to note the territory in which the species was abundant as opposed to that in which it was occasional. By combining such studies for many species, certain regions and subregions might be delimited, each surrounded by an additional area in which its influence was appreciable. Dr. Avinoff exhibited a number of maps on which the distribution of individual species of Rhopalocera had been indicated and a map of the Palæarctic Region with its boundaries ascertained from the combined distribution data. On this map a Transition area, in which the Palæarctic influence was appreciable but not dominant, was excluded; and in a general way it was found to coincide better with the early ideas of Wallace than with the recent map of Dr. Pagenstecher. Dr. Avinoff regarded the Chinese subregion as a part of the Indo-Malayan, and the Arabian as a modification of the African, rather than of the Palæarctic, though in both the Palæarctic influence could be traced.

The area of dispersion outside a province often results in its influence being superimposed upon the indigenous fauna, so that in Turkestan, for instance, two such areas of dispersion can be traced in one place.

Touching the American Fauna Dr. Avinoff said the Palæarctic influence

in its northern parts was evidently very great, so that the study of Siberian species became essential, especially that part of Siberia extending from Lake Baikal and the Altai Mts. eastward to the Pacific, of which the fauna was closely allied to ours.

His remarks were discussed by Dr. Lutz and Dr. Bequaert, the latter saying that the new method of fixing limits was very interesting and in northern Africa its results were corroborated by those of botanists, based upon the distribution of *Acacia*. However, he thought it difficult to agree about Arabia and the Sahara, the latter having possibly been at one time less arid than at present.

Mr. Leng mentioned the work of Poppius on the genus *Cryobius* as supplying evidence of the strong relation between Siberian and Hudsonian beetles.

Mr. Dow spoke of the great interest attached to John Abbot's plates and their superiority to the reproductions, also of the price he was paid for his work by John Francillon, viz.: $6\frac{1}{4}$ cents for each figure.

Dr. Lutz spoke of Westwood's original drawings presented by Mr. Hyde to the Museum.

Mr. Watson read a paper on "A Large Number of Species of Butterflies observed in One Day's Collecting," which will be printed elsewhere.

Mr. Notman exhibited and distributed specimens of *Protheca puberula*, a Ptinid beetle, of which he had bred more than 100 from rotten wood at Keene Valley, N. Y.

MEETING OF MARCH 5.

A regular meeting of the New York Entomological Society was held at 8:00 P. M., March 5, 1918, in the American Museum of Natural History, President Lewis B. Woodruff in the chair, with 22 members and two visitors, Messrs. F. G. Carnochan and J. Tee Van, present.

The Secretary read a letter from War Savings Society Bureau and exhibited enclosures accompanying same.

Mr. Engelhardt spoke of "Collecting in the Plateau Region of Southwestern Utah," illustrating his remarks by a large number of photographs and specimens of the Lepidoptera mounted by his companion, Mr. Jacob Doll. Mr. Engelhardt said in part that their headquarters from about April 19 to July 22 were at Gregerson's Ranch, Bellevue, Iron Co., Utah, from whence many excursions were made into the surrounding mountains, which in beauty of rugged sculpture and coloring, were among the most remarkable natural features of the continent. Bellevue is midway between Parowan and St. George, Utah, where H. F. Wickham collected, but the great differences of elevation in southwest Utah, ranging from 3,000 ft. in the Virgin River Valley to 10,000/12,000 ft. on the plateaus, cause great faunal differences, and his efforts were largely devoted to the more elevated sections, hitherto unexplored by entomologists. A full account of the expedition, with a map, is given in the January number of the *Brooklyn Museum Quarterly*. The in-

sects have been only partly worked up but, besides the discovery of an extended range for *Cicindela parowana*, already noted in the minutes, Mr. Engelhardt mentioned the capture of *Amblycheila schwarzi*, of four *Sphinx dolli* on evening primrose and of *Lycæna* and *Carabus* at 8,000 ft. elevation in the Pine Valley Mts. on June 1, though there had been 15 inches of snow the night before. The aspens showed many workings of *Saperda* in these mountains, but it was too early to obtain specimens. On the Kolob Plateau the larvæ of *Hemileuca* (?) were found on Indian Currant, and are being reared by Mr. Doll, also a small *Sphinx* on dandelion. At St. George, where the mild climate permits the cultivation of sugar cane, figs, etc., the yucca was abundant and Mr. Engelhardt secured larvæ, pupæ and adults, the latter very rapid at midday, of the skipper that breeds on it, *Ægiale yuccæ* var. *coloradensis*, and exhibited specimens, including the food plant and galleries made by the larva.

Near the little town of Hurricane, he visited a cave which served as a natural trap and on the countless mummied remains of the animals caught, found the Tenebrionid beetle *Cryptoglossa verrucosa* common. Much attention was paid to Cicadas on account of Mr. Davis's interest in them; one was remarkable for the similarity of its song to the noise of the rattlesnake.

Mr. Davis stated that five species of Cicadæ had been collected by Mr. Engelhardt and that it was the song of *Okanagana schaefferi* that resembled the whir of a rattlesnake, and in this instance occasionally deceived the listener. Mr. Englehardt collected 17 males and two females of this species in the foothills of the Kolob Mts., in Washington Co., Utah, June 24, 1917.

In reply to a question by Mr. Schaeffer, Mr. Engelhardt said the two specimens of *Amblycheila shwarzi* were found drowned in a pool in the nearly dry bed of an arroyo and were perhaps washed down the cañon, so that little could be safely said of the environment.

Mr. Engelhardt's experience with coyotes, mormons and rough travel were very interesting, and illustrated, as well as the insects shown, the possibilities of a little known region.

Mr. Nicolay as Chairman of Field Committee, presented the following schedule of outings: March 31, Palisades; April 7, Staten Island; April 14, Central Park, L. I.; April 21, South River; April 28, Great Notch; May 5, Greenwood Lake; May 12, Jamesburg; May 19, Ft. Montgomery; May 26, Central Park, L. I.

Mr. Notman exhibited the following Adirondack dragon flies:

Lestes unguiculatus Hagen....(Keene Valley.)

Lestes disjunctus Selys.....(Keene Valley.)

Lestes uncatus Kirby.....(Mt. Marcy, 4,500 ft. Keene Valley.)

Argia putrida Hagen.....(Keene Valley.)

Chromagrion conditum Hagen..(Mt. Marcy, 4,500 ft.)

Nehalennia irene Hagen.....(Mt. Marcy, 4,500 ft.)

Enallagma hageni Walsh.....(Keene Valley.)

Enallagma ebrium Hagen.....(Mt. Marcy, 4,500 ft. Keene Valley.)

- Enallagma carunculatum* Morse. (Keene Valley.)
Enallagma piscinarium Wmsn.. (Mt. Marcy, 4,500 ft. Keene Valley.)
Enallagma exsulans Hagen.... (Keene Valley.)
Enallagma antennatum Say.... (Keene Valley.)
Ischnura verticalis Say..... (Mt. Marcy, 4,500 ft. Keene Valley.)
Plathemis lydia Drury..... (Keene Valley.)
Leucorhinia hudsonica Hagen.. (Mt. Marcy, 4,500 ft.)
Nannothemis bella Uhler..... (Mt. Marcy, 5,000 ft.)
Sympetrum semicinctum Say... (Keene Valley.)

MEETING OF MARCH 19.

A regular meeting of the New York Entomological Society was held at 8:00 P. M., March 19, 1918, in the American Museum of Natural History, President Lewis B. Woodruff in the chair, with 14 members and four visitors present.

Mr. Leng called attention to the approaching twenty-fifth anniversary of the Society's incorporation on June 7, 1893, and suggested that a special meeting be held June 7, 1918, to celebrate it.

On motion the matter was referred to the Executive Committee.

Mr. Davis read a paper on the "Introduction of Palæarctic Mantids in the North Atlantic States" illustrated by many specimens of *Tenodera sinensis* and *Mantis religiosa* and the native *Stagmomantis carolina*, with their egg masses and nymphs. This will be printed in full in the *Bull. Br. Ent. Soc.*

In the discussion that followed, Messrs. Engelhardt, Barber and Watson gave further details of their captures, recorded by Mr. Davis. Mr. Davis also described his journey from Farmingdale to Cold Spring Harbor, Long Island, in June, 1917, particularly in reference to the West Hills and Millville. The most interesting capture resulted from finding 27 curled leaves under a poplar, near Cold Spring Harbor, from which emerged a tortricid moth, *Anachampsis innocuella*. As will be printed in Miscellaneous Notes, the discovery that the leaves are deliberately cut off by the larvæ seemed new. Other notes made by Mr. Davis are as follows: Along the road in the West Hills, first a female and then a male of the beautiful geometrid moth *Nacophora quernaria* was found. The black and white color pattern, conspicuously contrasted in the female, is most intricate; and a careful comparison of the wings will show that to a certain extent the bilateral resemblance is not maintained in every particular.

A colony of grasshoppers, *Eritettix carinatus* was found on top of High Hill (410 ft.), one of the West Hills, and Long Island's highest ground.

In the Cicindela field at Cold Spring five *Cicindela generosa*, one *tranquebarica*, three *rugifrons*, and eight *modesta* were found on June 21. Since the destruction of the Aqueduct locality, this is the only known place on Long Island where *Cicindela modesta* can be found, and all the specimens from Cold Spring are spotted like those found on Staten Island, and no immaculate individuals, such as used to occur at Aqueduct, have been collected.

Dr. J. Bequaert spoke "On New and Interesting Bees, chiefly from Arizona" captured by him while a member of the Cornell Transcontinental Automobile Expedition. These were *Emphor bombiformis* Cress., found on mud road on left bank of Sabine River in Louisiana, which showed that *Emphor fuscojubartus* Ckll. found near Arlington, N. J., by Grossbeck, and Cape May, N. J., by Davis, was distinct, not a synonym.

Dieunomia marginipennis found on flowers of *Helianthus annuus* near Tempe, Ariz., which proves to have a pollen gathering brush beneath the abdomen as well as on the legs.

Perdita ? n. sp. An exceedingly small bee, 4 mm. long, found near Tempe, Ariz., on the flowers of a trailing euphorbia. It was abundant but too small to be caught in the net and the great heat made the labor of catching them by crawling up with a collecting bottle, too arduous to be long continued.

Cauloplicana yarrowi Cress., a crepuscular bee taken about 5:00 A. M. in Texas on desert willows, where it was detected by its buzzing before it became light.

Hemisia morsei Ckll. and *rhodopus* Ckll. were found on *Centaurea* flowers near water tanks east of Sierra Blanco, Texas, while carrying water around the end of a freight train, but the absence of a net necessitated catching them by hand. Dr. Bequaert said that the females had very good stings.

Xenoglossa particia Ckll., another crepuscular species, was found on flowers of wild squash which open in the evening and close before morning. Often they could be found by day hidden in the closed flowers.

Dr. Bequaert pointed out in connection with these crepuscular bees certain characters in the ocelli and the color common to all.

Protoxæa gloriosa Fox was shown for its beauty and five other insects, a syrphid fly, *Sphiximorpha loewii* Williston, a *Polistes navajoe* Cress., and three *Megacanthopus flavitarsis* Sauss., for their similar coloration, which is even more apparent in life than in dried specimens.

Mr. Davis said the colony of *Emphor* he knew of at Cape May occurred in a path worn hard by constant use.

Mr. Engelhardt said the primrose and low euphorbia flowers were very attractive to crepuscular insects in southwest Utah, as he had observed while collecting specimens of *Sphinx*.

In reference to the activity of Hymenoptera at night, Mr. Davis said his experience in hunting at night with a lantern indicated more activity than might be suspected. *Camponotus americanus* was certainly more active at night than by day. He quoted also the following passage from Rev. J. G. Wood's "Insects at Home," p. 354, to show the activity on moonlight nights of *Vespa crabro*: "The successful capture of a hornet's nest is a very difficult business and that of a wasp's is child's play to it. In the first place it is much more difficult to cut a nest out of a hollow tree than to dig it out of the earth, and in the next place *the hornet works all night*, provided the moon shines, whereas the wasp stays at home."

Mr. Woodruff exhibited a number of depauperized *Spermophagus robinæ*

hatched from honey locust beans in June. The beans had been gathered in October and kept very dry so that all the specimens were much smaller than usual.

Mr. Nicolay exhibited specimens of *Pediculus vestimenti*, parasitic lice, locally common in New York City and known there as "cooties."

Mr. Olsen exhibited a Japanese work on Cicadellidæ and an interesting collection of that family from the U. S. N. M. in which were specimens of several interesting species.